Socrative Student Review Answers from 12/10/12

From a science perspective, why do we wear seatbelts? Be sure to include the following in your answer: inertia, Newton's First Law of Motion.

*You wear seatbelts because you would want an object stopping you from having your whole body fly forward. A seatbelt will slow down or stop your inertia (****the tendency of object to remain in motion****), so there will be a less chance for you to get an injury. In Newton’s First Law it says that you would* ***need an opposite force acting upon you to stop you****.*

From a science perspective, why are air bags a good thing to have in a vehicle? Be sure to include the following in your answer: time, impulse, force.

*Air bags are a good thing to have in a vehicle because they increase the amount of* ***time*** *it takes for a* ***force*** *to act on your body.* ***Impulse*** *equals force times the change in time (time it takes the object to stop). The force required to stop will always be the same, but if you increase the change in time you can increase the impulse. The greater the impulse the lesser the effect of the force that is acting on your body.*

Why does the width of a seat belt matter to the person sitting in a car?

*It matters because if our seat belt is a small wire, all the force and pressure is being applied one small area when we are in a collision. This will cause the seat belt to cut into. A wider seat belt allows the pressure being applied on us to be spread out on our body and not concentrated in one spot.*

What is the impulse required to bring a 500-kg vehicle, accelerating at 14 m/s-squared to a stop in 5 seconds?

* *Impulse = F*Δ*t*
* *We need to figure Force with the equation F=ma so F =500kg x 14m2 or 7000N*
* *Impulse = 7000N x 5-sec or* ***35,000Ns***

How much pressure would a person with a weight of 223N exert while standing on both their hands? One of their hands has an area of 0.4m2.

* *Pressure = F/A*
* *We need to double the area to 0.8m2 since they are standing on both hands*
* *Pressure = 223N/.8m2 or* ***278.5N/m2***